

ing the appearance of a Woronin's hypha, but nothing was discovered that could be directly homologized with an archicarp.

The basidia bud out from the fertile hyphae, and new basidia are formed mainly at the periphery, but some younger ones may later be intercalated between the old. Sometimes the fertile hyphae branch to a considerable extent (aecidium on *Ranunculus*), and it is probable that there is present more than one fertile hypha in large aecidia. The fertile hyphae in the aecidia on *Peltandra* and *Houstonia* branch very little. Spores are formed after the manner described by Rosen. The sterile interstitial cell is cut off from the lower portion of the spore mother cell. In many cases the spores contain a triple nucleus in place of the usual double nucleus. The peridium appears to result from the metamorphosis of the outer layer of spores or spore mother cells. In the aecidium on *Sambucus* there are even present at first the interstitial cells, but these soon disappear with the enlarging of the peridial cells and the thickening of their walls.—B. M. D.

MINOR NOTICES.

THE INDIANA ACADEMY of Sciences has been a strong and active society from its organization in 1885. In March 1895 the state assumed the expense of the publication of its proceedings, three volumes having previously been printed by the society. The proceedings for 1894 and 1895 have been printed in accordance with the state law, and put into the hands of the state librarian, who has only recently distributed them for lack of funds to cover postage. The volume for 1895 contains 298 pages and many well printed illustrations. Its articles embrace a wide range of subjects and are of high merit. The principal botanical papers are as follows: Wm. Stuart describes experiments which reduced the smut of corn from 13 per cent. to 3 per cent. by using Bordeaux mixture, and to 6 per cent. by using ammoniacal copper carbonate; Severance Burrage gives a new station (Lafayette, Ind.) for *Pleodorina Californica*, with notes upon some features of its occurrence; Stanley Coulter reports upon noteworthy Indiana phanerogams and upon some special collections as part of the state biological survey, which has been under way for three years; Alida Cunningham also contributes to the survey an account of the distribution in the state of thirty-seven species of Orchidaceæ. There are shorter articles or notes upon the circulation of protoplasm in *Chara* by D. W. Dennis, microscopic changes in the shrinkage of woods by M. J. Golden, microscopic slides as adjuncts to an herbarium by John S. Wright, and forms of *Xanthium Canadense* and *X. strumarium* by J. C. Arthur. There is an extended report upon a biological survey of Turkey lake, from which one misses an account of the aquatic or plankton flora, with the exception of a note on the occurrence of a *Rivularia* in quantity to form *Wasserblüthe*, and of a *Palmella* that replaces it in a similar way in late autumn.—J. C. A.

DR. B. L. ROBINSON and Mr. H. von Schrenk have published²⁸ an interesting account of their botanical exploration of Newfoundland during the summer of 1894. It is strange that this very accessible and interesting region has been visited so seldom by botanists, the spermatophyte flora being scarcely represented in the best herbaria of Europe and America, and in none better than by fragmentary sets of Banks and LaPylaie. The visit was made to secure a number of uniform sets for distribution and to lay the foundation of a fuller knowledge of the flora. Some twenty sets were secured, containing 381 numbers of spermatophytes and pteridophytes, 123 of which have not been recorded hitherto from Newfoundland.—J. M. C.

A PUBLICATION of more than usual interest has just been issued from the Boissier herbarium. Under the title *Hortus Boissierianus* Mr. Eugène Autran, curator of the herbarium, and M. Théophile Durand, curator of the botanic garden at Brussels, have published a volume of nearly 600 pages containing an enumeration of the plants cultivated in 1885 by Boissier, the year of his death, in the gardens at Valleyres and Chambésy, specimens from which have enriched many collections. Possessed of an ample fortune and large experience, M. Boissier brought together a most remarkable collection of living plants, containing many specific types. This great collection has been preserved with the greatest care, and today presents unusual facilities for botanical study. The wealth of living material thus brought to notice cannot fail to attract the interest and attention of botanists. The volume is not a bare enumeration of the nearly 5000 species, but includes synonymy, ample bibliography, which is especially useful in its references to good plates, and geographical distribution. The careful establishment of 5000 specific names is a great task, and we anticipate that *Hortus Boissierianus* will become almost as familiar in taxonomic references as *Hortus Clifortianus*, *Hortus Kewensis*, etc. A summary of the enumeration shows 2524 species of dicotyledons, 1748 monocotyledons, 77 gymnosperms, and 346 pteridophytes, besides 359 well marked varieties. An interesting preface is written by M. F. Crépin, the director of the botanic garden at Brussels.—J. M. C.

DR. VEIT WITTROCK has published the result of his studies upon the history and origin of pansies.²⁹ The wild pansy, *V. tricolor* L., was first mentioned by Brunfels in 1536, at which time it was found not only wild but cultivated for ornament in the gardens of Germany. The name "pansy" was first used in botanical literature by the Frenchman Ruellius, in 1537. Although used as an ornamental plant during the sixteenth, seventeenth, and

²⁸ ROBINSON, B. L. and SCHRENK, H. VON.—Notes upon the Flora of Newfoundland. Reprinted from the Canadian Record of Science, January and April 1896.

²⁹ Acta Horti Bergiani 2: no. 7. 1896.

eighteenth centuries, the forms were properly wild pansies, and it is only in the present century that the numerous varieties of garden pansies have been produced. The pansies of the present day are originally natives of England, where during the first years of the present century much attention began to be paid to pansy cultivation. From that time on the progress has been very rapid. Dr. Wittrock concludes that the pansies of the present day form an aggregate of very different forms of plants produced by hybridization between various species of the genus. The original stock is *V. tricolor*, but several other kindred species have been grafted thereon, and one of them, *V. lutea* Huds., to such a degree that it has probably a larger share in the production of the pansies of the present day than *V. tricolor*. From this point of view, the cultivated pansy cannot be included exactly under the idea of species or variety as used by taxonomists. Comparison of cultivated forms with their wild ancestors shows that the most conspicuous change is that the transverse diameter of the flower has become about the same as its longitudinal diameter, brought about by an excessive development chiefly of the middle petals. As regards the spur, pansies generally follow the short-spurred parent species, *V. tricolor*, *V. lutea*, and *V. altaica*. The few long-spurred pansies show their descent from such species as *V. cornuta* and *V. calcarata*. In coloration the cultivated forms show a far greater variation than all the parent species, scarcely a color or shade being unrepresented excepting green, even pure blue and pure red having been obtained, the most difficult colors to produce. Whatever the variety of color may be, the "eye," that part of the lowest petal which is immediately in front of the entrance to the spur, is always bright yellow. The author, regarding this as closely associated with pollination by insects, considers it as indicating such a degree of resistance to all conditions that it will give way to nothing. The same fixity of color is found in the spur, at least towards its tip, which is always some shade of violet no matter what permutations of color may be displayed by the flower in general. The significance of this is not suggested, and if the pollinating insects prove to be color blind, as is claimed now by physiologists, the yellow eye, as well as all floral coloration, will need a new explanation.—
J. M. C.